

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference JIHJ-14-PCT	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/JP2004/001426	International filing date (day/month/year) 10/02/2004	(Earliest) Priority Date (day/month/year) 12/02/2003
Applicant ISHIKAWA-HARIMA HEAVY INDUSTRIES CO., LTD.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☐ **Unity of invention is lacking** (see Box III).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

PULSE DETONATION ENGINE SYSTEM FOR DRIVING A TURBINE

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the drawings,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 2

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

A pulse detonation engine system (1) for driving a turbine comprises a detonation generator section (5) including a detonation tube (7) having a tubular hollow section for permitting detonation to be generated therein during combustion stage of a mixture gas combined with a gas and a fuel, a gas supply section (17) for feeding the gas into the tubular hollow section of the detonation tube (7) at given time intervals, a fuel valve (19) for feeding the fuel into the tubular hollow section of the detonation tube (7) at the given time intervals, and an ignition plug (15) for igniting the mixture gas in the tubular hollow section of the detonation tube (7), and a pulse detonation driven turbine (9) driven directly or indirectly by energy of detonations that are intermittently generated in the tubular hollow section of the detonation tube (7).

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP2004/001426

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 F02C5/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F02C F02K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 6 167 693 B1 (ANDERSON J HILBERT) 2 January 2001 (2001-01-02)</p> <p>figures 5,14,16 column 5, line 29 -column 7, line 18 column 8, line 23 -column 9, line 36 column 10, line 47 -column 11, line 19 column 22, line 28 - line 48 column 25, line 52 -column 26, line 55 --- -/--</p>	<p>1-3,11, 12, 14-16, 23,24</p>

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

26 May 2004

Date of mailing of the international search report

14/06/2004

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INTERNATIONAL SEARCH REPORT

International Application No

ST/JP2004/001426

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 062 018 A (BUSSING THOMAS R A) 16 May 2000 (2000-05-16) abstract; figures 1,6,7,15 column 2, line 30 - line 41 column 3, line 64 -column 4, line 11 column 9, line 15 - line 45 column 10, line 53 -column 11, line 47 column 14, line 32 -column 15, line 19 -----	1-3,12, 14-16,24
X	GB 1 048 448 A (HEINZ TEVES;MARTIN TAUSEND; ERNST AUGUST TEVES) 16 November 1966 (1966-11-16) the whole document -----	1,6,9, 13,14, 19,25
X	US 5 513 489 A (BUSSING THOMAS R A) 7 May 1996 (1996-05-07) abstract; figures 3,11,25 column 1, line 33 - line 54 column 4, line 37 -column 5, line 23 column 6, line 7 - line 12 column 9, line 3 - line 14 column 15, line 3 -column 16, line 2 -----	1,10,12, 14,22,24
X	CH 233 945 A (SULZER AG) 31 August 1944 (1944-08-31) figures 3,4 page 1, line 1 - line 25 page 2, line 31 - line 57 page 3, line 70 -page 4, line 5 page 4, line 36 - line 72 -----	1-3, 14-16

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP2004/001426

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6167693	B1	02-01-2001	US 5983624 A	16-11-1999
			US 2003000221 A1	02-01-2003
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